

EXAMINER'S AMENDMENT

1. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.
2. Authorization for this examiner's amendment was given in a telephone interview with Mr. Luke K. Pederson (Reg. No. 45,003) on 08/26/2010.
3. **Amendment to the Claims:**

Replace claims 1, 25, 26, 27, 29, 30, 31, 34, 35 with the following paragraph:

1. (Currently Amendment) Computer apparatus configured to discover roles from structure existing amongst users to whom resources have been assigned, the apparatus comprising:

a processor,

a discovery unit, operable via said processor, configured for searching for patterns within links between users and resources partitioned into a set of nodes of users and a set of nodes of resources, wherein:

each user of said set of nodes of users comprises a node with an assignment of resources from the set of nodes of resources, and

the links comprise said assignments between respective users and resources,

a grouping unit, associated with said discovery unit, configured to use said discovered patterns to form at least one group from said user nodes ~~or said resource nodes~~ using said discovered patterns, such that:

users ~~or resources~~ having all or a subset of at least two links to common resources ~~or users~~ are automatically determined to be placed into a same group, and

the users ~~or resources~~ of the at least one group did not exist as a group prior to the discovery unit searching for patterns within the links, and

25. (Currently Amendment) Role discovery method for electronically grouping nodes according to existing relationships with resources, the method comprising:

discovering existing relationship patterns between an arrangement of user nodes and resources across a partition between said user nodes and resources, wherein the patterns are discovered from predetermined relationships between ones of said resources and corresponding user nodes,

using said discovered patterns, automatically determining groupings of said arrangement of user nodes, wherein user nodes within said groupings share relationships with at least two common resources,

wherein the user nodes of each of the groupings did not exist as a group prior to discovering the existing relationship patterns, and

outputting said automatically determined grouping groupings of user nodes having common patterns of at least two existing relationships with resource nodes as a role.

26. (Currently Amendment) A device for discovering existing structure in a partitioned arrangement of user nodes and resources wherein nodes have relationships with various of said resources, the device comprising:

a processor,

a discovery unit configured to work with said processor, for discovering relationship patterns within existing relationships between a partitioned arrangement of said user nodes and said resources, wherein:

the arrangement comprises at least two sets, and

the existing relationships comprise predetermined relationships defined between said user nodes and said resources across said sets, and

the discovery unit uses pattern recognition on said user nodes, said resources and said predetermined relationships,

a node-grouping unit associated with said pattern recognition unit and configured to operate with said processor to use said discovered relationship patterns to automatically determine groups from said user nodes, such that:

those user nodes that share similar subsets of at least two relationships with said resources are placed in a group together, and

the user nodes of each group of said groups did not exist as a group prior to discovering the relationship patterns, and

an output unit configured to output respective groups of said automatically determined groups of user nodes having said similar subsets of at least two relationships as roles.

27. (Currently Amendment) A computer device comprising:

- a processor,
- a first series of user definitions, each user in said definitions defined as a user node;
- a second series of resource definitions, each resource in said definitions defined as a resource node;
- access data indicating access of users to respective ~~resources~~ resource nodes;
- a pattern recognition unit operable with said processor for recognizing pre-existing patterns in said access data, said patterns indicative of a way of automatically grouping said user nodes of said each user so as to discover groups of user nodes having common subsets of access data related to at least two resources,
- wherein the user nodes of the automatically discovered groups did not exist as a group prior to recognizing the pre-existing patterns in the access data, and
- a group definition unit operable with said processor and said pattern recognition unit configured to output said automatically discovered groups so discovered as roles.

29. (Currently Amendment) Pattern recognition apparatus for grouping nodes according to relationships with other nodes, the apparatus comprising:

a pattern recognition processor for using pattern recognition on links between nodes partitioned into a first set and a second set, the first set comprising user nodes and the second set comprising resource nodes, to find relationship patterns within said links, and from said relationship patterns to automatically determine at least one group from user nodes of said first set, wherein said nodes being formed into said group share relationships with at least two resource nodes in said second set,

wherein the user nodes of the automatically determined at least one group did not exist as a group prior to using pattern recognition on the links, and

wherein the links define relationships across said partition between user nodes in the first set and resource nodes in the second ~~set~~, set, and

an output unit for configured for outputting the automatically determined at least one group.

30. (Currently Amendment) A group discovery method, comprising:

electronically searching for links between nodes partitioned into a first data set and a second data set, the first data set comprising user nodes and the second data set comprising resource nodes, wherein: said links exist between user nodes in the first data set and resource nodes in the second data set,

automatically determining a grouping of user nodes in said first set according to respective links found by the electronic searching such that all user nodes in said first set having links to at least two commonly held resource nodes in said second set are assigned to a same group, thereby discovering groups in said data, and

wherein the user nodes of the automatically determined grouping did not exist as a group prior to electronically searching for the links, links, and outputting said automatically determined grouping.

31. (Currently Amendment) A method of grouping users having links or attributes into one or more groups based on said links or attributes, the method comprising:

searching for the links or attributes of the users, wherein the links or attributes of each user characterize an association between the user and a resource;

automatically determining a group for users sharing all or a subset of at least two of said links or attributes discovered by the searching step,

wherein the users of the automatically determined group did not exist as a group prior to searching for the links, and

outputting said automatically determined group.

34. (Currently Amendment) A search method comprising:

electronically searching data comprising nodes partitioned into first and second data sets, the first data set comprising user nodes and the second data set comprising resource nodes, wherein links exist within said data between nodes in said first data set and nodes in said second data set, such links being discovered as a result of the electronic searching,

automatically determining groupings of nodes in said first set according to respective links discovered as a result of the electronic searching such that all nodes in said first set having links to at least two commonly held nodes in said second set are assigned to a same group, and

wherein the nodes of each group in the automatically determined groupings of nodes did not exist as a group prior to electronically searching the data, and ~~data~~.

outputting a group of user nodes in response to automatically determining groupings of nodes in said first set.

35. (Currently Amendment) A search apparatus for searching existing electronically held data, said electronically held data comprising nodes partitioned into first and second data sets, wherein links exist within said data between nodes in said first data set and nodes in said second data set the apparatus comprising:

a search unit, configured for electronically searching for links within data comprising nodes partitioned into first and second data sets, the first data set comprising user nodes and the second data set comprising resource nodes, wherein said links exist within said data between nodes in said first data set and nodes in said second data set,

a structuring unit, associated with said search unit, configured for automatically determining groupings of nodes in said first set according to respective links discovered by the search unit such that all nodes in said first set having links to at least two commonly held nodes in said second set are assigned to a same group, thereby automatically discovering groups in said data,

wherein the nodes of each group in the automatically determined groupings of nodes did not exist as a group prior to electronically searching for the links within the data, and data.

an output unit configured for outputting a group of user nodes in response to the structuring unit automatically determining groupings of nodes in said first set.

REASONS FOR ALLOWANCE

4. The following is an examiner's statement of reasons for allowance:
5. The prior art does not expressly teach or render obvious the invention as recited in independent claims 1, 25 - 27, 29 - 31, and 34 - 35.
6. **As to claim 1**, the closest prior art of records, Stone (US pub. no. 2003/0233439) does not specifically disclose or suggest the claimed recitations of "automatically determining groups of said arrangement of user nodes, wherein user nodes within said groupings share relationships with at least two common resources; the users of the at least one group did not exist as a group prior to the discovery unit searching for patterns within the links, and an output unit configured for outputting said at least one automatically determined group of users formed by the grouping unit as a role.", when taken in the context of claims as a whole.
7. **As to claims 2 - 24, 32 - 33**, they are allowed as they depend upon allowable independent claim 1.
8. **As to claim 25**, the closest prior art of records, Stone (US pub. no. 2003/0233439) does not specifically disclose or suggest the claimed recitations of "automatically determining groups of said arrangement of user nodes, wherein user nodes within said groupings share relationships with at least two common resources;

wherein the user nodes of each of the groupings did not exist as a group prior to discovering the existing relationship patterns, and outputting said automatically determined groups of user nodes having common patterns of at least two existing relationships with resource nodes as a role.", when taken in the context or claims as a whole.

9. **As to claim 26**, the closet prior art of records, Stone (US pub. no. 2003/0233439) does not specifically disclose or suggest the claimed recitations of "automatically determine groups from said user nodes, such that: those user nodes that share similar subsets of at least two relationships with said resources are placed in a group together, and the user nodes of each group of said groups did not exist as a group prior to discovering the relationship patterns, and an output unit configured to output respective groups of said automatically determined groups of user nodes having said similar subsets of at least two relationships as roles.", when taken in the context or claims as a whole.

10. **As to claim 27**, the closet prior art of records, Stone (US pub. no. 2003/0233439) does not specifically disclose or suggest the claimed recitations of "automatically grouping said user nodes of said each user so as to discover groups of user nodes having common subsets of access data related to at least two resources, wherein the user nodes of the automatically discovered groups did not exist as a group prior to recognizing the pre-existing patterns in the access data, and a group definition

unit operable with said processor and said pattern recognition unit configured to output said automatically discovered groups so discovered as roles.", when taken in the context or claims as a whole.

11. **As to claim 29**, the closet prior art of records, Stone (US pub. no. 2003/0233439) does not specifically disclose or suggest the claimed recitations of "automatically determine at least one group from user nodes of said first set, wherein said nodes being formed into said group share relationships with at least two resource nodes in said second set, wherein the user nodes of the automatically determined at least one group did not exist as a group prior to using pattern recognition on the links, and an output unit for configured for outputting the automatically determined at least one group.", when taken in the context or claims as a whole.

12. **As to claim 30**, the closet prior art of records, Stone (US pub. no. 2003/0233439) does not specifically disclose or suggest the claimed recitations of "automatically determining a grouping of user nodes in said first set according to respective links found by the electronic searching such that all user nodes in said first set having links to at least two commonly held resource nodes in said second set are assigned to a same group, thereby discovering groups in said data, wherein the user nodes of the automatically determined grouping did not exist as a group prior to

electronically searching for the links, and outputting said automatically determined grouping.", when taken in the context or claims as a whole.

13. **As to claim 31**, the closet prior art of records, Stone (US pub. no. 2003/0233439) does not specifically disclose or suggest the claimed recitations of "automatically determining a group for users sharing all or a subset of at least two of said links or attributes discovered by the searching step, wherein the users of the automatically determined group did not exist as a group prior to searching for the links, and outputting said automatically determined group.", when taken in the context or claims as a whole.

14. **As to claim 34**, the closet prior art of records, Stone (US pub. no. 2003/0233439) does not specifically disclose or suggest the claimed recitations of "automatically determining groupings of nodes in said first set according to respective links discovered as a result of the electronic searching such that all nodes in said first set having links to at least two commonly held nodes in said second set are assigned to a same group, wherein the nodes of each group in the automatically determined groupings of nodes did not exist as a group prior to electronically searching the data, and outputting a group of user nodes in response to automatically determining groupings of nodes in said first set.", when taken in the context or claims as a whole.

15. **As to claim 35**, the closet prior art of records, Stone (US pub. no. 2003/0233439) does not specifically disclose or suggest the claimed recitations of “a structuring unit, associated with said search unit, configured for automatically determining groupings of nodes in said first set according to respective links discovered by the search unit such that all nodes in said first set having links to at least two commonly held nodes in said second set are assigned to a same group, thereby automatically discovering groups in said data, wherein the nodes of each group in the automatically determined groupings of nodes did not exist as a group prior to electronically searching for the links within the data, and an output unit configured for outputting a group of user nodes in response to the structuring unit automatically determining groupings of nodes in said first set.”, when taken in the context or claims as a whole.

16. Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled “Comments on Statement of Reasons for Allowance.”

17. Any inquiry concerning this communication or earlier communications from the examiner should be directed to PHUONG N. HOANG whose telephone number is

(571)272-3763. The examiner can normally be reached on Monday - Friday 9:00 am to 5:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hyunh S. Sough can be reached on 571-272-6799. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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